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Strawberries 101: Nutrition Facts and Health Benefits

Written by Adda Bjarnadottir, MS, RDN (Ice) on March 27, 2019

Nutrition Vitamins & minerals Plant compounds Benefits
Downsides Bottom line

Strawberries are very healthy, containing many antioxidants and vitamins. They're also low in calories, containing only about 32 calories per half a cup.

The strawberry (*Fragaria ananassa*) originated in Europe in the 18th century.

It is a hybrid of two wild strawberry species from North America and Chile.

Strawberries are bright red, juicy, and sweet.

They're an excellent source of vitamin C and manganese and also contain decent amounts of folate (vitamin B9) and potassium.

Strawberries are very rich in antioxidants and plant compounds, which may have benefits for heart health and blood sugar control (1, 2).

Usually consumed raw and fresh, these berries can also be used in a variety of jams, jellies, and desserts.

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Nutrition facts

Strawberries mainly consist of water (91%) and carbohydrates (7.7%). They contain only minor amounts of fat (0.3%) and protein (0.7%).

The nutrients in 3.5 ounces (100 grams) of raw strawberries (3) are:

- **Calories:** 32

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- **Protein:** 0.7 grams
- **Carbs:** 7.7 grams
- **Sugar:** 4.9 grams
- **Fiber:** 2 grams
- **Fat:** 0.3 grams

Carbs

Fresh strawberries are very high in water, so their total carb content is

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The net digestible carb content is fewer than 6 grams in the same serving size.

Most of these berries' carbs come from simple sugars — such as glucose, fructose, and sucrose — but they also contain a decent amount of fiber.

Strawberries have a glycemic index (GI) score of 40, which is relatively low (4).

This means that strawberries should not lead to big spikes in blood sugar levels and are considered safe for people with diabetes.

Fiber

Fiber comprises around 26% of the carb content of strawberries.

One 3.5-ounce (100-gram) serving of strawberries provides 2 grams of fiber — both soluble and insoluble.

Dietary fibers are important to feed the friendly bacteria in your gut and improve digestive health. They are also useful for weight loss and can help prevent many diseases (5, 6).

> **SUMMARY**
>
> Strawberries' carbs consists mainly of fibers and simple sugars. They have a relatively low GI and should not cause big spikes in blood sugar levels.

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Vitamins and minerals

The most abundant vitamins and minerals in strawberries are:

- **Vitamin C.** Strawberries are an excellent source of vitamin C, an antioxidant necessary for immune and skin health (7, 8).

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many processes in your body (9).

- **Folate (vitamin B9).** One of the B vitamins, folate is important for normal tissue growth and cell function — and fundamental for pregnant women and older adults (10, 11, 12).
- **Potassium.** This mineral is involved in many essential body functions, such as regulating blood pressure (13, 14).

To a lesser extent, strawberries also provide iron, copper, magnesium, phosphorus, and vitamins B6, K, and E.

> **SUMMARY**
>
> Strawberries are a good source of vitamin C, manganese, folate (vitamin B9), and potassium. They contain small amounts of several other vitamins and minerals.

Other plant compounds

Strawberries are loaded with antioxidants and beneficial plant compounds, including:

- **Pelargonidin.** The main anthocyanin in strawberries, this compound is responsible for the bright red color (15).
- **Ellagic acid.** Found in high amounts in strawberries, ellagic acid is a polyphenol antioxidant that may have many health benefits (16).
- **Ellagitannins.** Related to ellagic acid, ellagitannins are converted to ellagic acid in your gut (16).
- **Procyanidins.** These are antioxidants commonly found in strawberry flesh and seeds that may have beneficial health effects (17, 18).

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Anthocyanins

More than 25 different anthocyanins have been found in strawberries. Pelargonidin is the most abundant (15, 20).

Anthocyanins are responsible for the bright colors of fruits and flowers.

They are usually concentrated in the skins of fruit, but berries — such as strawberries — also tend to have anthocyanins in their flesh.

Anthocyanin content is usually proportional to color intensity, increasing greatly as the fruit ripens (21, 22).

Anthocyanin-rich foods are associated with numerous health benefits, especially regarding heart health (23, 24).

Ellagitannins and ellagic acid

Strawberries are consistently ranked among the top sources of phenolic antioxidants — with levels 2–11 times greater than other fruits (25, 26, 27).

Ellagitannins and ellagic acid comprise a large part of these antioxidants in strawberries (28).

They have received considerable attention and have been linked to numerous health benefits. This includes fighting bacteria and a reduced risk of cancer (29, 30, 31).

The main ellagitannin in strawberries is sanguiin H-6 (1).

SUMMARY

Strawberries contain high amounts of beneficial plant compounds and antioxidants, such as pelargonidin, ellagic acid,

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How much exercise do you get on an average day?

None

Less than 30 minutes

More than 30 minutes

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Health benefits of strawberries

Eating strawberries is associated with a reduced risk of many chronic diseases (31, 32, 33).

Strawberries may improve heart health, lower blood sugar levels, and help prevent cancer.

Heart health

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Studies have found a relationship between berries — or berry anthocyanins — and improved heart health (21, 34, 35, 36).

Large observational studies in thousands of people link berry consumption to a lower risk of heart-related deaths (37, 38, 39).

According to a study in middle-aged people with well-established risk factors for heart disease, berries may improve HDL (good) cholesterol, blood pressure, and blood platelets function (40).

Strawberries may also (21, 23, 41, 42, 43, 44):

- improve blood antioxidant status
- decrease oxidative stress
- reduce inflammation
- improve vascular function
- improve your blood lipid profile
- reduce the harmful oxidation of LDL (bad) cholesterol

The effects of freeze-dried strawberry supplements on type 2 diabetes or metabolic syndrome have been studied intensely — mainly in overweight or obese individuals.

After 4–12 weeks of supplementing, participants experienced a significant decrease in several major risk factors, including LDL (bad) cholesterol, inflammatory markers, and oxidized LDL particles (45, 46, 47, 48, 49).

Blood sugar regulation

When carbs are digested, your body breaks them down into simple sugars and releases them into your bloodstream.

Your body then starts secreting insulin, which tells your cells to pick up

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Imbalances in blood sugar regulation and high-sugar diets are associated with an increased risk of obesity, type 2 diabetes, and heart disease (50, 51, 52).

Strawberries seem to slow down glucose digestion and reduce spikes in both glucose and insulin following a carb-rich meal, compared to a carb-rich meal without strawberries (53, 54, 55, 56).

Thus, strawberries may be particularly useful for preventing metabolic syndrome and type 2 diabetes.

Cancer prevention

Cancer is a disease characterized by uncontrolled growth of abnormal cells.

Cancer formation and progression is often linked to oxidative stress and chronic inflammation (57, 58).

A number of studies suggest that berries may help prevent several types of cancer through their ability to fight oxidative stress and inflammation (59, 60, 61).

Strawberries have been shown to inhibit tumor formation in animals with mouth cancer and in human liver cancer cells (62, 63).

The protective effects of strawberries may be driven by ellagic acid and ellagitannins, which have been shown to stop the growth of cancer cells (64, 65).

More human research is needed to improve the understanding of the effects of strawberries on cancer before any solid conclusions can be reached.

SUMMARY

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as well as help regulate blood sugar.

Adverse effects

Strawberries are usually well tolerated, but allergy is fairly common — especially in young children.

Strawberries contain a protein that can cause symptoms in people who are sensitive to birch pollen or apples — a condition known as pollen-food allergy (66, 67, 68).

Common symptoms include itching or tingling in the mouth, hives, headaches, and swelling of the lips, face, tongue, or throat, as well as breathing problems in severe cases (69).

The allergy-causing protein is believed to be linked to strawberries' anthocyanins. Colorless, white strawberries are usually well tolerated by people who would otherwise be allergic (70).

Furthermore, strawberries contain goitrogens that may interfere with the function of the thyroid gland in people with thyroid problems (71).

SUMMARY

Strawberry allergy is rather common, especially among children. Individuals who are sensitive to birch pollen or apples may experience symptoms after consuming strawberries.

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The bottom line

Strawberries are low in calories, delicious, and healthy.

They are a good source of many vitamins, minerals and plant compounds — some of which have powerful health benefits.

The health benefits include reduced cholesterol, blood pressure, inflammation, and oxidative stress.

Furthermore, these berries may help prevent big spikes in both blood sugar and insulin levels.

Strawberries are an excellent addition to a healthy diet.

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Do I Have a Strawberry Allergy?

Medically reviewed by Natalie Butler, R.D., L.D. — Written by Natalie Silver — Updated on September 18, 2018

Symptoms Incidence Causes Risk factors Cross-reactive foods Avoid Seeking help Outlook Prevention

What is a strawberry allergy?

Biting into a ripe strawberry can be a delightful experience. But if you have a strawberry allergy, eating these red berries can cause a range of symptoms. You may notice a rash, a strange feeling in your mouth, or even a more severe reaction like anaphylaxis. If you're allergic to strawberries, you'll have to avoid the fruit and possibly similar fruits to prevent an allergic reaction.

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What are the symptoms?

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Food allergy symptoms include:

- throat tightness
- itching or tingling mouth
- skin rashes, such as hives or eczema
- itchy skin
- wheezing
- cough
- congestion
- nausea
- stomach pains
- vomiting
- diarrhea
- dizziness
- lightheadedness

You may be able to treat mild or moderate allergies with antihistamines. These are available over the counter and can reduce symptoms. However, over-the-counter (OTC) medications won't help if you have a severe allergic reaction.

A severe allergy to strawberries may result in a life-threatening allergic reaction called anaphylaxis. Anaphylaxis causes several symptoms to occur at the same time and requires immediate emergency medical treatment.

The symptoms of a severe allergic reaction include:

- tongue swelling
- blocked airway or swelling in the throat

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- dizziness
- lightheadedness
- loss of consciousness

Anaphylaxis must be treated with epinephrine. This can be administered with an auto-injector, such as an EpiPen. If you have a severe allergy, you'll always need to have one with you. An intolerance may still involve the immune system, but not IgEs, the type of antibody that can lead to anaphylaxis. Symptoms of an intolerance can be delayed and can take up to 72 hours to show up.

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How common is it?

An allergic reaction to strawberries means you have a food allergy. Food allergies are somewhat common. They affect 6 to 8 percent of children under age 3, and up to 9 percent of adults.

Fruit and vegetable allergies are still common, but they occur less often.

What are the causes?

Food allergies occur when the immune system reacts to a food you've eaten. Or, in severe cases, a food you've touched. Your immune system

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into the bloodstream. Histamine can cause many symptoms that range in severity.

A food allergy isn't the same thing as a food intolerance. Food intolerance doesn't cause an allergic reaction. But, a food intolerance can cause symptoms similar to a food allergy.

Food intolerance can occur due to many factors, including food poisoning or lack of an enzyme that digests a certain component of the food. Your doctor can determine whether you have a food allergy or a food intolerance.

What are the risk factors?

A family history of allergies, eczema, or asthma increases the chances you might have a food allergy. You can develop one at any time, though children have a higher rate of allergies than adults. However, children sometimes outgrow an allergy.

You can also develop a food allergy even if you don't have a family history of allergies. Delayed introduction of allergenic foods to babies older than 7.5 months can actually increase risk of food allergies, so introduce between 5.5 and 7 months for protection.

If your child develops allergy symptoms after eating strawberries, eliminate the fruit from their diet and talk to your doctor.

What else could I be allergic to?

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family include:

pears

- peaches
- cherries
- apples
- raspberry
- blackberries

If you have a known allergy to a fruit in this family, you could also have a strawberry allergy. Despite blackberries being in the *Rosaceae* family, no known cross-reactions have been reported among strawberry and blackberry allergies. Raspberries contain several known allergens and are therefore are more responsible for allergic reactions in this family of fruits.

An example of a cross-reactive allergy is oral allergy syndrome. Some people develop this condition as older children, teens, and adults. The symptoms include:

- itchy mouth
- scratchy throat
- swelling in and around the mouth and throat

This allergy is linked with pollen allergies. Strawberries and other fruits in the *Rosaceae* family are linked to birch allergic rhinitis (hay fever).

The symptoms of oral allergy syndrome usually resolve when the raw fruit (or vegetable causing oral allergy syndrome) is swallowed or taken out of your mouth, but this isn't always the case. If symptoms are severe or life-threatening, seek emergency medical treatment. Some people may be able to eat the fruit or vegetable if it's cooked without having an allergic reaction, but you should speak to your doctor before trying this.

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Foods to avoid

If you notice allergic symptoms after eating strawberries, eliminate them from your diet right away. This includes foods that contain strawberries in any form, including flavoring.

You may have a reaction to strawberries even if they aren't on the food you eat. For example, a strawberry used to decorate a piece of chocolate cake may result in an allergic reaction if you eat the cake, even if you didn't eat the strawberry.

You may also develop food allergy symptoms from fruits related to the strawberry. If you experience symptoms after eating fruits such as peaches, apples, or blackberries, eliminate them from your diet as well.

When to seek help

Talk to your doctor if you suspect you have a food allergy. Your doctor will talk to you about your symptoms and your family history. They may also perform some tests. Food allergy tests include:

- skin tests
- elimination diets

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Type of test	What to expect
skin test	Your doctor pricks your skin and exposes the suspected allergen to it. Your doctor will then look for a reaction on your skin.
elimination diet	This test requires you to take certain foods out of your diet and add them back in after a few weeks.
blood test	Your doctor draws your blood and sends it to a laboratory. A technician at the laboratory tests your blood with specific foods and looks for certain antibodies in the blood.
oral food challenge	This test requires you to consume small amounts of a suspected allergen under a doctor's supervision. The doctor then looks for a reaction. If you don't react to the food, you may be able to continue eating it.

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foods.

Strawberries are used to flavor many foods, so you'll need to check ingredient labels closely to make sure they aren't in processed food. When you go out to eat, let your server know about your allergy and make sure anyone preparing food for you is aware of your allergy.

Depending on the severity of your strawberry allergy, you may want to reintroduce them into your diet at some point to see if you still have the allergy. In this case, talk to your doctor about an oral food challenge.

Food substitutes

Avoiding strawberries doesn't mean you can't enjoy other fruits. But, be mindful of the fruits related to strawberries that may also cause allergic reactions. Bananas, blueberries, and melons aren't part of the *Rosaceae* family, so you may want to eat those fruits in place of strawberries.

If you can't eat several fruits and vegetables because of allergies, ask your doctor if you should supplement your diet to ensure you're getting all necessary vitamins and minerals.

Recent studies are looking at ways to breed hypoallergenic strawberries. Some studies show that breeds of strawberries without their red color may reduce allergic reactions. Someday you may be able to have certain strawberry varieties even if you have a strawberry allergy.

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